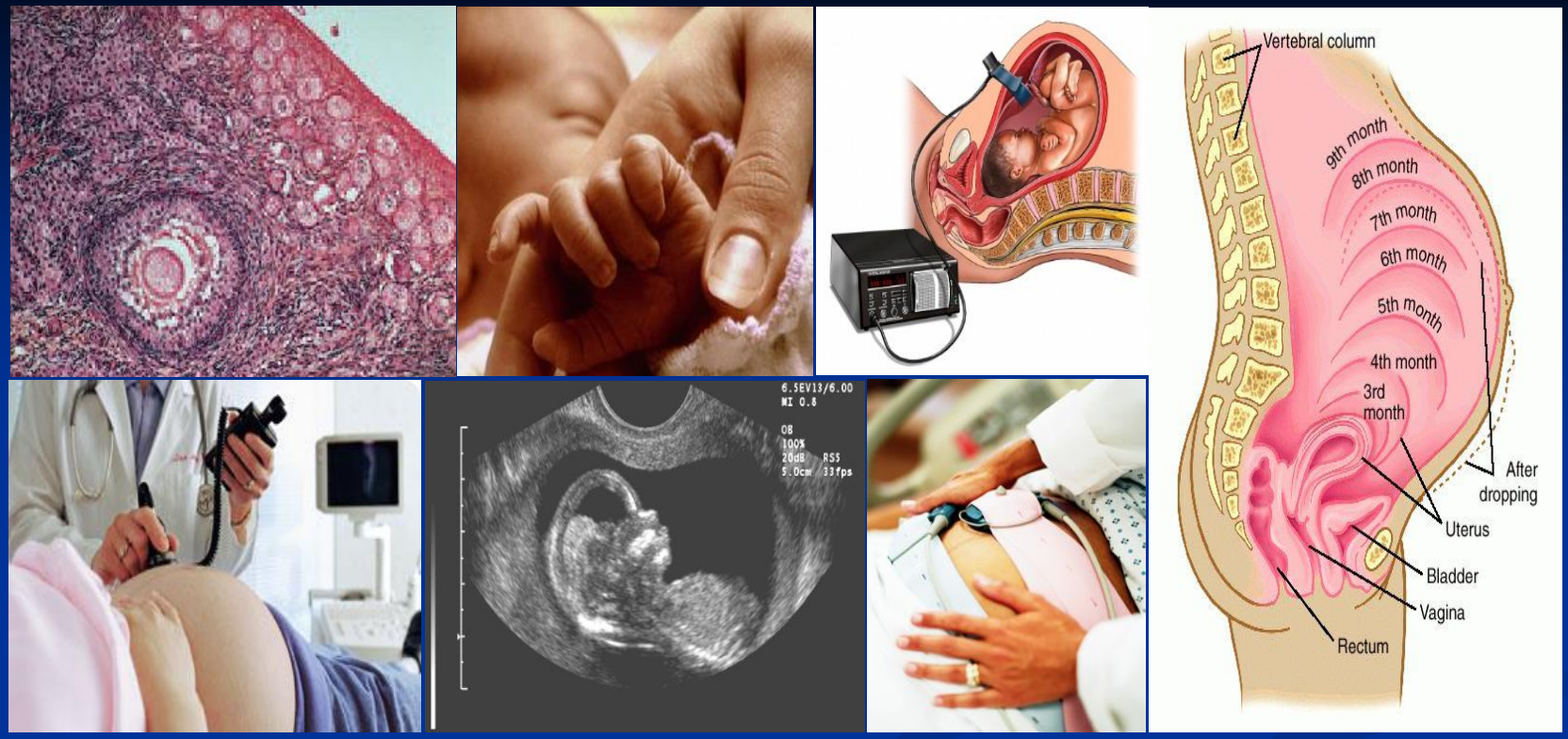

Amniotic Fluid Embolism (AFE)

Definition of AFE

- AFE is a rare obstetric emergency in which amniotic fluid, fetal cells, hair, or other debris enter the maternal circulation, causing cardiorespiratory collapse.

epidemiology

- The incidence of clinically detectable AFE is low
- estimated to be 1 in 20,000 to 80,000 live births.
- Maternal mortality approaches 80%.
- 5%- 10% of maternal mortality in the United States is due to AFE.
- Of patients with AFE, 50% die within the first hour of onset of symptoms.
- Of survivors of the initial cardiorespiratory phase, 50% develop a coagulopathy.
- Neonatal survival is 70%.

- Current data suggest that the process is more similar to anaphylaxis than to embolism

- term anaphylactoid syndrome of pregnancy has been suggested

Major causes and factors

- occurs in obstetric terms or during labor
- multiparous woman with a large baby
- a short tumultuous labor
- use of uterine stimulants
- occurred during abortion
- amnioinfusion
- Amniocentesis
- caesarian section
- placenta accreta
- ruptured uterus

pathology

- Amniotic fluid and fetal cells enter the maternal circulation, possibly triggering an anaphylactic reaction to fetal antigens.
- (1) Clinical symptoms result from mast cell degranulation with the release of histamine and tryptase,
- (2) Clinical symptoms result from activation of the complement pathway.

Progression usually occurs in 2 phases.

- phase I:
- pulmonary artery vasospasm with pulmonary hypertension and elevated right ventricular pressure cause hypoxia.
- Hypoxia causes myocardial capillary damage and pulmonary capillary damage, left heart failure, and acute respiratory distress syndrome.

- **Women who survive these events may enter phase II:**
- This is a hemorrhagic phase characterized by massive hemorrhage with uterine atony and DIC
- however, fatal consumptive coagulopathy may be the initial presentation.

Presentation

- The clinical presentation of AFE is generally dramatic
- in the late stages , acutely dyspnea and hypotension with rapid progression to cardiopulmonary arrest
- In 40% of cases, followed by some degree of consumptive coagulopathy,

- **Hypotension:** Blood pressure may drop significantly with loss of diastolic measurement.
- **Dyspnea:** Labored breathing and tachypnea may occur.
- **Seizure:** The patient may experience tonic-clonic seizures.
- **Cough:** This is usually a manifestation of dyspnea.
- **Cyanosis:** As hypoxia/hypoxemia progresses, circumoral and peripheral cyanosis and changes in mucous membranes may manifest.

- Pulmonary edema: identified on chest radiograph.
- Cardiac arrest
- Uterine atony:
- Fetal bradycardia: In response to the hypoxic
- Uterine atony usually results in excessive bleeding after delivery.

Differentials

- Anaphylaxis
- Aortic Dissection
- Cholesterol Embolism
- Myocardial Infarction
- Pulmonary Embolism
- Septic Shock

Lab Studies

- Arterial blood gas (ABG) levels: Expect changes consistent with ypoxia/hypoxemia

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- Decreased pH levels
- Decreased PO2 levels
- Increased PCO2 levels
- Base excess increased

- Hemoglobin and hematocrit /Thrombocytopenia is rare/ platelets /
- Prothrombin time (PT)
- Activated partial thromboplastin time (aPTT)
- fibrinogen (Fg)
- Blood type and screen
- Chest radiograph
- A 12-lead ECG

Treatment

- Administer oxygen to maintain normal saturation.
- Initiate cardiopulmonary resuscitation (CPR) if the patient arrests.
- Treat hypotension with crystalloid and blood products.
- Consider pulmonary artery catheterization in patients who are hemodynamically unstable.

- Treat coagulopathy with fresh frozen plasma(FFP) for a prolonged aPTT, cryoprecipitate for a fibrinogen level less than 100 mg/dL, and transfuse platelets for platelet counts less than 20,000/mL.
- Continuously monitor the fetus.
- Delivery quickly (forceps)

- Surgical Care: Perform emergent cesarean delivery in arrested mothers who are unresponsive to resuscitation.
- hemorrhage was controlled with bilateral uterine artery embolization.

Uterine Rupture

- is one of the most feared complications of pregnancy
- the fetus, placenta, and a lot of blood extruding into the mother's abdomen
- from a weak spot in the uterine wall or uterus scar

Uterine rupture

- Reported in 0.03-0.08% of all delivering women, but 0.3-1.7% among women with a history of a uterine scar
- 13% of all uterine ruptures occur outside the hospital
- Morbidity is hemorrhage and subsequent anemia, requiring transfusion
- Fetal morbidity is more common with extrusion and includes respiratory distress, hypoxia, acidemia, and neonatal death

Risk Factors for Uterine Rupture

- Excessive uterine stimulation
- Previous C/S
- Trauma
- Prior rupture
- Previous uterine surgery
- Multiparity
- Non-vertex fetal presentation
- Shoulder dystocia
- Forceps delivery

presentation

- Most uterine ruptures occur without symptoms and do not cause problems for the mother or fetus.

- This mild type is only noticed when surgery is required for other reasons.

- In the most severe form , the laceration is large or cuts across the uterine blood vessels
- the mother may hemorrhage and require a blood transfusion
- the uterus may not be repairable and must be surgically removed (hysterectomy)
- Many women will be advised not to get pregnant again, due to the risk of repeated rupture
- the baby may not survive
- the mother's life cannot be saved

Signs of uterine rupture

- severe, localized pain
- abnormalities of the fetal heart rate
- vaginal bleeding
- the vaginal examination may show that the baby is not as low in the birth canal as he had been earlier.

Preventing and Treatment

- Some uterine ruptures occur before labor and are considered unpreventable.
- Sudden severe abdominal pain in later pregnancy should be reported
- Women with risk factors (prior classical cesareans, deep fibroid excisions, and other major uterine surgeries)should not attempt labor
- should be scheduled for cesarean usually between 36 and 39 weeks' gestation.

- If trying for vaginal birth after low transverse cesarean(VBAC), fetal monitoring is important
- When uterine rupture is diagnosed during labor, an emergency cesarean is performed.
- Usually the baby's life can be saved.

THANKS FOR YOUR ATTENTION

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